NWS Weather Event Simulator 6.0 Instructions

NWS Warning Decision Training Branch

Norman, OK

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WES6.0 Release Notes

What's New in WES6.0

1. **Updated with AWIPS OB6.0**

    - New VIL density product in SCAN
    - Time of arrival tool
    - Basin trace in FFMP
    - IGC_Process updated with the OB7.1 fix that will fix the 3x slowdown in D2D's FFMP display introduced in OB6.0 baseline

2. **WES6.0 Baseline Changes to Redhat Enterprise 3 Along with AWIPS**

    - Redhat Enterprise 4, other Linux versions continue to work

3. **PostGres Database**

    - Major change from using flat files as a database proxy to using Postgres for the AWIPS databases
    - If you would like to remove Informix from the old WES installation, copy rminformix.sh from the release CD to the WES machine as root, and run.

4. **WESSL Improvements**

    - LSR Importer tool (provided by Brian Walawender and George Phillips WFO Topeka KS) for inserting local storm reports directly into the WESSL builder. The storm reports are retrieved from the SPC website and can be filtered by time range and/or WFO
    - Added -pause tool which allows a WESSL script to pause itself and a simulation at a pre-determined time
    - WESSL pop-ups will no longer steal window focus from D2D
    - Added a button which allows video, sound and commands to be replayed in the WESSL station log. The green "RUN WESSL COMMAND" button appears in any log entry containing a –command, -sound or –video WESSL command

5. **WESSL Plays Videos and Articulate Version 5 Presentations**

    - With easy XINE video application install option for Redhat Enterprise 3 and 4
    - Added -video tool which allows a WESSL script to launch videos using the Xine video application

- With easy Flash plug-in install instructions for your Linux browser (In Summer 2006, WDTB will be working on providing Articulate Version 5 files for the severe and core tracks of AWOC)

6. **User Adaptable Grid Product Delay**

   - Now control the time delay of Grid files with a user adaptable file

7. **Miscellaneous WES Enhancements**

   - All patches following WES5.0 have been included in WES6.0
   - New instructions to use other machines with WES to run multiple forecasters through a simulation
   - The "Create FFMP Data" tool has been modified with assistance from MDL to create FFMP data ~40x faster (~20 sec instead of 10-15 minutes)
   - When a simulation is paused, a colored border appears around both D2D and the simulation status window alerting the user that the simulation is paused
   - New WES tool for initializing the Postgres database with archived text data
   - D2D startup and simulation software will inform you of any version differences between the localization and the AWIPS
   - The start_awips and enhanced_case_review now have default settings. During case review (no simulation) the default settings will be the previous values used. During a simulation, the default settings will be the settings used in the simulation

8. **New WES6.0 Training at WES Website**

   - A WES6.0 Articulate presentation is now available from the WES website http://wdtb.noaa.gov/tools/wes/wes60.htm
   - WDTB maintains a WES website located at the following address: http://wdtb.noaa.gov/tools/wes/index.htm
   - This site contains valuable information regarding WES development, WES fixes, WES troubleshooting and AWIPS status

WES6.0 Known Problems

1. **TextQC.config Settings**

   - The textQC.config file in the nationalData directory has been configured to eliminate some QC pop-ups. If you would like to fully enable the QC checking on text products, copy over your textQC.config file from your operational AWIPS.

2. **Pre-OB6 AVN Grid Products are Accessed in new GFS Directories**
    - The GFS directory and product changes in AWIPS OB6.0 were not designed to work with older archived cases. A workaround was developed in WES6.0 to automatically fix old cases by linking the new GFS directories to the old AVN directories, which allows viewing older AVN data. The byproduct of this solution is that the GFS models will be mislabeled with the OB6 menu item label (e.g. GFS 40) rather than the old label (e.g. GFS 80).

Older Cases (WES4.0 / OB4) Known Problems

3. **SCAN and DMD Data**

    - SCAN and DMD data that worked in WES5.0 should continue to work with no modification necessary
    - For SCAN and DMD data that was created in WES4.0 (OB4) or older, you must create new SCAN and DMD data by running a simulation. After this, a script needs to be run to update the original files. (refer to Chapter 12 of the WES6.0 install instructions for full instructions)

4. **FFMP Data**

    - FFMP data that worked in WES5.0 should continue to work with no modification necessary
    - For FFMP data that was created in WES 4.0 (OB4) or older, you must recreate the FFMP data by using the “Create FFMP Data” function under the WES tools menu using an OB6.0 localization. Section 11.1 of the WES6.0 install instructions details this process

WES6.0 Post Install

As with all major WES releases, new localizations need to be built for older cases to display properly with the OB6.0 in WES6.0. For more information, see the WES6.0 installation instructions.

WES6.0ww Additional Development

The next WES release is planned for Spring 2006 with support for GFE and its use in the 2006 Winter Weather Advanced Warning Operations Course (WWAWOC)

1. Requirements and Overview

The WES6.0 baseline operating system is Linux Redhat Enterprise 3 (RHEL3), which is the same as the AWIPS baseline operating system. Many other Linux versions/distributions continue to work with the majority of AWIPS and WES functionality (including RH7.2, RH9.0, RHEL4, and more), though there can be minor setup issues that crop up (see http://wdtb.noaa.gov/tools/wes/FAQ.htm for more information) or problems with the new video functionality for WESSL (RH7.2 issue). Numerous desktops/window managers also work with AWIPS and WES, but there have been some isolated problems reported. If you experience operating system problems like frozen windows when the clock is set back in a simulation or spontaneous log outs, we recommend using the Gnome desktop and the Sawfish window manager with the screensaver off.

The WES6.0 install CD is entirely self contained and therefore does not require any previous WES versions to be installed. If a previous version of WES was installed, the installation script will replace: 1) the WDTB WES software with WES6.0, 2) the Linux version of AWIPS with OB6.0, and 3) the COTS "freeware" software (in /usr/local).

If you have not installed WES on the machine being used in the current installation and you plan on having AWIPS data stored locally on your machine, then you will have to identify a large partition on a drive to store the files. Each case study generally occupies between 5 and 10 GB of disk space, so it is suggested that you have a MINIMUM 15GB of available space for both data and the WES6.0 distribution. Ideally, you will have 50GB+ set aside to handle multiple large datasets. The general convention for housing WES and WES data is to have /data and /awips be symbolic links that point to the install directory. The install script will guide you through this process. The freeware located in /usr/local is ~ 555 MB in size.

If you have not successfully installed WES before, then you will need to configure your Linux display to support AWIPS D2D. In order to run D2D, your display should be in 24-bit Truecolor mode with a resolution of 1280x1024. You can check your current display with the "xdpyinfo" command. If you find that you need to change your display settings, run Xconfigurator. If you try to run D2D in 8-bit Pseudocolor mode the process will die a horrible death.

The WES6.0 package contains both NWS AWIPS software and WES© software. The WES© software was written by CIMMS personnel at the University of Oklahoma in collaboration with the Warning Decision Training Branch and others. Limitations exist on the distribution of this package, however, NWS collaborators may obtain WES6.0 at no cost by requesting a copy from the WES distribution focal point and by agreeing to the conditions of the WES© software license agreement in the install script. To submit requests for WES6.0 please contact Timm Decker at the Warning Decision Training Branch (timothy.b.decker@noaa.gov) for details.

2. Back Up Any Pre-existing WES Installation

1. Log in as root.
2. **“cd /awips”**.
3. Back up the fxa directory as root:

   e.g. “cp -Rp fxa fxa.wes5.0”

   ***Note:** If you desire to restore the previous version, you will need to move the old version back as root. Root user is important here because the /awips/fxa/DRT/bin/date executable has to be owned by root with special privileges.

3. Install WES6.0

1. Print out this file before starting if possible.
2. Log in as root.
3. Identify an install directory (e.g. /usr1) on a file system with 15GB+ of free disk space

   ***Note:** If you already identified an install directory for the previous WES installation, then use this same directory. The install script will notify you of the correct directory to use if you do not enter the same directory as in the previous WES installation.

4. Load and mount the Weather Event Simulator 6.0 install CD.

   e.g. “mount /media/cdrecorder” if the CD doesn't automatically mount
5. Cd to your cdrom device (**eg. “cd /media/cdrecorder”**).
6. Run **“./install-wes6.0.sh <your_install_directory>”.**

   ***Note:** The script will inform you about the files and directories that are going to be deleted. The installation will also prompt you to install Xine for video support, which you can do manually or let the installation script do it for you.

   ***Note:** After agreeing to continue with the installation, wait for install-wes6.0.sh to return "install-wes6.0.sh finished" (~5-10 minutes).

7. Install Flash plug-ins in the “plugins” directory of your browser (e.g. in **/usr/lib/mozilla-1.7.10/plugins** for mozilla1.7.10 or **/usr/local/netscape/plugins** for netscape). The necessary Linux Flash files were copied from the WES6.0 install CD into the /awips/fxa/install_flash_player_7_linux directory. An installation for mozilla would be the

following:

e.g. “cd /awips/fxa/install_flash_player_7_linux”

“cp libflashplayer.so /usr/lib/mozilla-1.7.10/plugins”

“cp flashplayer.xpt /usr/lib/mozilla-1.7.10/plugins”

***Note:** For more information on the plugin installation, view **/awips/fxa/install_flash_player_7_linux/Readme.txt**.

8. Logout and log back in as user fxa (if no fxa account previously existed, a new account was created by the install scripts with the password fxapass). If no postgres account previously existed, a new postgres account was also created with the password postgres.

4. Verify Successful CD Installation

4.1 Verify Flash and Xine Install

1. Login as user fxa (if no fxa account previously existed, a new account was created by the install scripts with the password fxapass).

2. Verify the Flash plugin installation by viewing the WES6.0 release articulate:

   e.g. "mozilla file:///awips/fxa/DRT/wessl/source/articulate/player.html"

   ***Note:** Following a successful installation, there should be a "yes" in the browser under the "Enabled" column found by clicking help and then "About Plug-ins". If the articulate fails to load, then review the manual Flash plugin installation in Section 17.

3. Verify the Xine installation by viewing an mpeg:

   e.g. "xine /awips/fxa/DRT/wessl/source/video/9jun05.mpg"

   ***Note:** If Xine fails to load, then review the manual Xine installation in Section 18.

4.2 Verify AWIPS/WES with "enhanced_case_review"

1. D2D in OB6.0 can have problems viewing data from previous AWIPS builds, so in order to verify a successful installation, you will need to install a small test case in /data/awips from the WES6.0 install CD.

   ***Note:** You will eventually need to create new localizations for all your old cases (see Sections 6-8) before you can fully display them in D2D with the OB6.0 AWIPS in WES6.0.

   ***Note:** FFMP, SCAN, and DMD data that worked in WES5.0 should continue to work in WES6.0. Any pre-OB5.0 FFMP, SCAN, and DMD data from your archived cases will need to be recreated for use in WES 6.0 by following the instructions in Section 12.

2. As user fxa, load and mount the Weather Event Simulator 6.0 install CD.

   e.g. "mount /media/cdrecorder" if the CD doesn't automatically mount

3. To install the test cases, cd to the CD device and run the WES6.0_testcase_install program:

e.g. "cd /media/cdrecorder"

e.g. "./wes6.0_testcase_install"

***Note:** If you have previously installed a WES test case, you may see the message "A case already exists in /data/awips/1997May01. Remove or move that case as directed".

4. After the case has been installed, the archived text data will need to be inserted into a new Postgres database while the case is in original format:

   - Run "start_simulator"
   - Click the "Tools" button
   - Click the "Write Archived Text to Database" button
   - Use the Select button to choose the 1997May01 case for the FXA_DATA and OUN as the FXA_LOCAL_SITE
   - Click "OK"
   - The simulator will display "Write to postgres database complete" when finished
   - Click "Exit"

   ***Note**: This tool will write all text data stored in /data/awips/<your_case>/archived_text/$PILNAME/YYYYMMDD_HHmmss format to a postgres database stored in /data/awips/<your_case>/pgdata. For more information on archiving text and writing the text to a Postgres database, see Section 10, "Adding Archive Text Data to Postgres".

5. Start D2D on the 1997May01 test case by typing **"enhanced_case_review"** at a shell prompt, hitting return, and:

   - select 1997May01 as the case and OUN as the FXA_LOCAL_SITE
   - Click the "OK" button
   - Select the "Start AWIPS Text Workstation Control" checkbox
   - Click "Start" on the D2D launcher

   ***Note:** The enhanced_case_review application starts up D2D and a few other AWIPS processes to allow text database access and also allow programs like FFMP and SCAN to work fully in static case review mode outside of a simulation. The enhanced_case_review will work on both original or DRT format cases, though the program cannot be run while the simulator is being run due to interference with the AWIPS processes. The "/awips/fxa/DRT/start_awips" program is still the D2D startup script to use during a simulation. For more on enhanced_case_review see Section 15.

   ***Note:** WarnGen will not work in enhanced_case_review (still need to run a simulation to use WarnGen).

6. Ensure the radar data for the first test case were loaded correctly by viewing the ktlx

"Z/SRM8" radar data in D2D:

- After D2D starts up, select 32 in the "Frames" menu
- Select "WFO" as the scale
- Under the "ktlx" menu, select "All Tilts Z/SRM8"
- Hold down the "Shift" key while using the arrow keys to go forward and backward in time and up and down in space for multiple volume scans.

***Note:** The data in this case contains a limited number of volume scans of Z, SRM, DV, DZ, DHR, and most other radar products from the ktlx radar for testing purposes. There is also ABRFC FFG data and an FFMP dataset created using the WES ffmp data creation tool.

***Note:** All mouse clicks in the WES software are single clicks.

7. Display the archived text data in D2D. This step assumes the archived text in the 1997May01 case has been written to the PostGres database (step 4).

   -While on CONUS scale, select "SPC Watches" from under the NCEP/Hydro menu, and step through the loop.
   -Some SPC watches should display (note the last frame comes up empty)
   -Clear the pane, select "WFO" scale, and load "Local CWA Warnings" from under the NCEP/Hydro menu
   -A warning polygon should display when stepping through the loop (note the last pane comes up empty)
   -Click on "Text 1" on the Text Workstation Control, and in AFOS Cmd: enter OKCSAW1 and hit return
   -The text of an SPC watch SAW text product should appear
   -In the same text editor type in OKCSVROUN
   -The text of a warning should appear

8. Display the FFMP data for ktlx while in enhanced case review.

   -Under the "SCAN" menu in D2D select "FFMP Image / Basin Table" under the "FFMP:ktlx" submenu
   -Select 1.00 under the "Durations" menu, and select "Worst Case Display". Then click "Refresh D2D"
   -A colored county map should be visible in D2D
   -Zoom into the basin with the most precipitation by selecting "OK, GREER" in the FFMP table and then click the "Ratio" column heading to rank by ratio. Select "5870" in the basins list under the "Area_Id" column
   -The screen should now be centered on basin 5870 with an "X"
   -Return to the WFO scale display by selecting the "Group: OK, GREER" button
   -Select the "Link to Frame" button, and step through the loop using the ">" button *in D2D*
   -The table will display "N/A" for times when no accumulations exist for the selected duration period.

-Return to the last frame in the loop by selecting the ">>|" button *in D2D*
-Under the "Thresh Type" button select "ratio" followed by "Refresh D2D" to update the county map in D2D for the ratio product

***Note:** Because FFMP data are stored differently than most AWIPS data (i.e. latest 6 hour accumulations in files with no time in the filenames), archived FFMP data won't work directly with WES. Instead, a tool exists within WES to create FFMP data from basin files and archived datasets containing DHR files and AWIPS format flash flood guidance (FFG) (covered in Section 11).

***Note:** FFMP may be three times faster than operational machines (if all else relatively equal) due to an operational bug in OB6.0 that is supposed to be fixed in the AWIPS baseline in OB7.1. WES has included the patch for this fix in its version of OB6.

7. Display the SCAN storm cells table for ktlx:

   -Under the "SCAN" menu in D2D select "Storm Cells / Site Storm Threat" under the "SCAN:ktlx" submenu
   -To get rid of the SCAN table, hit the clear button in D2D.

8. Display the SCAN DMD for ktlx:

   - Under the "SCAN" menu in D2D select "Storm DMD Icons & Table" under the "SCAN:ktlx" submenu
   -To get rid of the SCAN table, hit the clear button in D2D.

9. Under the "ktlx" menu, select "ktlx Graphics", and "Digital Mesocyclone (DMD)" to display the DMD data using the new OB6.0 D2D DMD display option.

   ***Note:** For information on enabling SCAN data for your own case data please refer to Section 12.

10. Shutdown D2D by selecting "Exit" under the "File" menu.

4.3 Verify AWIPS/WES in Simulation Mode

11. Run "**start_simulator**" to test a simulation on the 1997May01 data. **The case will need to be converted to DRT format** before running a simulation (see notes below). A simulation start time for this case (2346 UTC on May 01, 1997) has been set as the default in the new WES6.0 run simulation entry window along with a wessl file setting and an ffmp tar file setting (in future simulations the default will be the entry from the last time a simulation was run). If these settings are missing, select WES6.0_test_case_OUN after clicking the "Load Saved Settings" button.

***Note:** If you have not run a simulation before, click on the "Help" menu (upper right portion of the simulator) and "Instructions" submenu, and follow the instructions under "Convert Case to DRT Format" and "Run Simulation". For testing this test case you will not need to reselect the default entry fields.

***Note:** When the simulator prompts you to restart any D2D sessions, run **"start_awips".** In the start_awips GUI select 1997May01 as the case, and select the "Start AWIPS Text Workstation Control" checkbox.

12. Verify in the WFO scale that a ktlx "All Tilts Z/SRM8" all tilts radar product updates (usually once per minute).

***Note:** Every 15 seconds the main WES window will update with data being processed, and updates in D2D should happen shortly after the WES window lists the files being processed.

***Note:** If the storm motion file doesn't exist (as happens in a newly created localization) or if it becomes too old, a D2D popup warning message will appear when you first load the product. You have to create a storm motion with the Radar Display Controls for the motion to be updated correctly. To change the storm motion:

-toggle to the "SRM 8" product by selecting the "." key on the numeric keypad.
-under the "Tools" menu load "Radar Display Controls"
-enter 270 degrees at 30 kts as the SRM Custom Storm Motion
-trigger the display to update the new storm motion in the upper left right of the main pane by zooming in on the storm or moving the center of the display

13. Verify that a WESSL popup window appears each minute. Once the WESSL popups appear you can use the forward and backward buttons on the "WESSL Station Log" window to review previous WESSL popups.
14. Test creating a warning with WarnGen in D2D:

-clear the D2D pane and select a WFO scale map
-with no product loaded click on the WarnGen button in the upper right part of D2D
-move the "Drag me to storm" icon to somewhere in the center of the map
-select "Tornado" for "Product type" in the WarnGen popup window
-click on the "Create Text" button on WarnGen popup window
-a text window should appear if the text monitor was started with D2D
-click "Enter" to modify the warning
-Replace the line at the bottom containing "!**NAME/INITIALS**!" with your initials
-click the "Send" button and a popup message should appear
-click "Go Ahead" when the popup window messages appear.
-in a new pane on WFO scale load "Local CWA Warnings" from the NCEP/Hydro menu in D2D

***Note:** If you load a new warning polygon over old product data you need to wait about a

minute for the polygon to be displayed or you may need to select “Forced” for the time matching in the upper left part of D2D for the time matching to work.

15. After verifying the install was successful, shut down D2D and exit the simulator. You may consider putting icons on the desktop to start the start_simulator, start_awips, and enhanced_case_review scripts.

    ***Note:** FFMP, SCAN and DMD data are unique in a simulation. These products are created every volume scan from the input files. These products require their input files to exist in the case in order to work successfully during a simulation.

16. Verify your warning text was saved. In the process of creating warnings, AWIPS writes the text to a file in the <your_case>/textWSwork/$DISPLAY directory where $DISPLAY is the DISPLAY variable that the Text Workstation Control Monitor is run. After each simulation, the textWSwork directory is copied to the <your_case>/saved_textWSwork.$date directory.

    e.g. cd /data/awips/1997May01/saved_textWSwork
    ls (to look for the latest directory)
    cd textWSwork.022606223456 (for example)
    ll –R * (to look for a display directory like :0.1 with a KOUN warning file)
    cd :0/saved (for example)
    more KOUNTOROUN.wan19970501_235126

5. Customize AWIPS OB6.0 in WES6.0

5.1 Migrate Local AWIPS Customizations to the WEScustomization Directory in WES6.0

1. These customization instructions were designed to transfer AWIPS customization files from a real-time AWIPS with Build OB6.0 to WES6.0. If you don't have access to AWIPS customizations, then skip to Section 8.
2. The concept of migrating customizations to WES6.0 is to transfer all your important customization files from your local AWIPS to a central location on WES (WEScustomization directory) that will not be removed by future WES installations. Section 6 needs to be completed with help from the local AWIPS focal point who understands how the local AWIPS has been customized. To illustrate the following commands we will use the Chicago office, LOT, as the local CWA.
3. Log in to your WES machine as user fxa.
4. Identify a method to transfer files from your real-time AWIPS to your WES machine (floppy, cd, ftp, etc).
5. If you have previously customized your WES using previous WES customization instructions, you will need to back up the customFiles, userPrefs, global-LLL-files, storagefiles, mainConfig, and the XXX directory (eg. LOT) in the /awips/fxa/WEScustomizations directory before you update WES6.0 with your new OB6.0 customizations.

   e.g. "cd /awips/fxa/WEScustomization/"

   e.g. "mv customFiles customFiles.ob5.0"

   e.g. "mv userPrefs userPrefs.ob5.0"

   e.g. "mv global-LLL-files global-LLL-files.ob5.0"

   e.g. "mv storagefiles storagefiles.ob5.0"

   e.g. "mv mainConfig mainConfig.ob5.0"

   e.g. "mv LOT LOT.ob5.0"

6. Copy the /data/fxa/customFiles directory on your DS into the /awips/fxa/WEScustomization directory on the WES.

   e.g. "cp -R customFiles /awips/fxa/WEScustomization" from cd

7. Copy the /data/fxa/userPrefs directory on your DS into the /awips/fxa/WEScustomization directory on the WES machine.

e.g. "cp -R userPrefs /awips/fxa/WEScustomization" from cd

8. Copy the /awips/fxa/data/localization/XXX directory (where XXX is your localization ID) on your LX1 workstation to the /awips/fxa/WEScustomization directory on your WES machine. The directory on the LX1 machine should contain the most up to date localization files which were used for the installation of OB6.0

   e.g. "cp -R LOT /awips/fxa/WEScustomization" from cd

9. Copy the following files from your DS to the /awips/fxa/WEScustomization/storagefiles directory:

   /awips/fxa/data/localization/nationalData/virtualFieldTable.txt
   /awips/fxa/data/localization/nationalData/gridPlaneTable.txt
   /awips/fxa/data/colorMaps.nc
   /awips/fxa/data/fxa-users
   /data/fxa/workFiles/customColorMaps.nc

10. Change the permissions on the colorMaps.nc file to "-rw-rw-rw" if they aren't set this way:

    e.g. "chmod 666 /awips/fxa/WEScustomization/storagefiles/colorMaps.nc"

11. Copy the following files from your WS to the /awips/fxa/WEScustomization/storagefiles directory:

    /awips/fxa/data/vb/browser*.txt (not needed if browser*.txt files are already in the customFiles directory).

12. Copy a LINUX VERSION of any specialized map files (*.bcx found in the /awips/fxa/data/localizationDataSets/XXX directory) into the /awips/fxa/WEScustomization/storagefiles directory.

13. Copy any other relevant local customized files to the /awips/fxa/WEScustomization/storagefiles directory.

5.2 Migrate the Local AWIPS OB6.0 Customizations to the New OB6.0 with WES6.0

1. The following instructions assume you have copied over your AWIPS customizations to the WEScustomization directory as instructed in section 5.1
2. Identify a local case with your CWA to create a localization for in /data/awips. To illustrate the following commands, we will use a 2002Jun12 case from the LOT CWA as an example.
3. If you have already applied steps 4, 5, 6, and 7 in a previous WES customization using WES customization instructions, you can skip steps 4, 5, 6, and 7.
4. As user fxa, backup your customFiles and userPrefs directories in your case:

   e.g. "cd /data/awips/2002Jun12"
   "mv customFiles customFiles.orig"
   "mv userPrefs userPrefs.orig"

5. Make a customFiles symbolic link in your data case that points to the customFiles directory in WEScustomization:

   e.g. "ln -s /awips/fxa/WEScustomization/customFiles
   /data/awips/2002Jun12/customFiles"

6. Make a userPrefs symbolic link in your data case that points to the userPrefs directory in WEScustomization:

   e.g. "ln -s /awips/fxa/WEScustomization/userPrefs
   /data/awips/2002Jun12/userPrefs"

7. Cd to the data case and list out the contents of the links to ensure the links resolve the appropriate directories and files in /awips/fxa/WEScustomization.

   e.g. "cd /data/awips/2002Jun12"
   "ls customFiles"
   "ls userPrefs"

8. **"cd /awips/fxa/data/localization"** and backup your local CWA XXX directory:

   e.g. "mv LOT LOT.orig"

9. While in the same directory as step 8 (/awips/fxa/data/localization), make an XXX symbolic link (where XXX is your local CWA) that points to the pre-localization directory in WEScustomization:

e.g. "ln -s /awips/fxa/WEScustomization/LOT LOT"

10. List out the contents of the XXX link in /awips/fxa/data/localization/ created in step 9 to ensure the link resolves the appropriate directories and files in /awips/fxa/WEScustomization.

    e.g. "ls /awips/fxa/data/localization/LOT"

11. Before copying any of the following files into the WES AWIPS, make a backup version of the file you are copying over.

    "cd /awips/fxa/WEScustomization/storagefiles", and copy:

file:	to location:
virtualFieldTable.txt	/awips/fxa/data/localization/nationalData
gridPlaneTable.txt	/awips/fxa/data/localization/nationalData
browser*.txt	/awips/fxa/data/vb (not needed if in customFiles)
fxa-users	/awips/fxa/data
customColorMaps.nc	/data/awips/{$case_name}/workFiles

    where {$case_name} refers to your case (eg. 2002Jun12).

12. Copy any other relevant files in the storagefiles directory to the appropriate AWIPS directory.
13. Now you are ready to create a localization for your local case.

6. Create a New Localization for Your Local Case

1. A new AWIPS localization usually needs to be created for every major AWIPS build upgrade, or when you create a case from scratch. If you have not customized your WES (Section 5), the localization you create will contain all the AWIPS default settings for color tables, templates, etc.

   ***Note:** If you try to use an old localization on a newer version of AWIPS associated with a new WES install, D2D will sometimes hang on the startup and some products may not be displayable.

2. Cd to your localizationDataSets directory in your local case.

   e.g. "cd /data/awips/2002Jun12/localizationDataSets"

3. Move any old localization you are going to recreate.

   e.g. "mv LOT LOT.ob5.0"

4. **"cd /awips/fxa/data/localization/scripts"** and run mainScript.csh with your localization ID:

   e.g. "mainScript.csh LOT LOT"

   ***Note:** You will be prompted to enter your case name and verify it is correct.

5. When mainScript.csh is done, **"cd /awips/fxa/WEScustomization/storagefiles"**.
6. Copy any colorMaps.nc and *.bcx files from the /awips/fxa/WEScustomization/storagefiles directory to your new localization in /data/awips/{$case_name}/localizationDataSets/XXX, where {$case_name} is your local case (e.g. 2002Jun12) and XXX is your localization (e.g. LOT).
7. Start D2D with the new localization, and verify your localization was successful and any customizations took effect. Once you have verified your localization was successful, then try running a simulation to test creating a warning with WarnGen.
8. To update other local cases with the new customizations, first create the links in the new case that point to the WEScustomization subdirectories (*ie. steps 4-7 in Section 5.2*) if they haven't been created. Then, back up the customColorMaps.nc file and XXX localization in the new case (we will now use 2002Jun12 as the old local case and 2003Feb01 as the new local case from LOT in the following command examples):

   eg. "cd /data/awips/2003Feb01/workFiles"

“mv customColorMaps.nc customColorMaps.nc.ob5.0”

“cd /data/awips/2003Feb01/localizationDataSets”
“mv LOT LOT.ob5.0”

9. Then copy the customColorMaps.nc and new XXX localization into the new local case:

   eg. “cp /data/awips/2002Jun12/workFiles/customColorMaps.nc /data/awips/2003Feb01/workFiles”

   “cp -R /data/awips/2002Jun12/localizationDataSets/LOT /data/awips/2003Feb01/localizationDataSets”

10. If you would like to be able to create localizations for other CWAs that contain your WarnGen templates, color tables, etc, and then complete Section 7.

7. Link Local CWA Customizations to All Other CWAs

1. This section provides instructions on how to create localizations for other CWAs that will contain your local WarnGen templates, color tables, etc, so you can train like you fight on cases outside your CWA. In the following example we will use LOT as the local CWA that will be customizing the BMX localization for the 1998Apr08 Birmingham, AL case in /data/awips/1998Apr08.
2. The approach to making customized localizations other than your CWA involves linking all relevant local customization files to all the other CWAs before running mainScript.csh.
3. Log in as user fxa, and choose a case (e.g. 1998Apr08) to make a new localization for (e.g. BMX) that is not your local CWA.
4. If you have already made a customFiles symbolic link and a userPrefs symbolic link in this data case (steps 4, 5, 6, and 7 from Section 5.2) that point to the appropriate directories in WEScustomization, then skip steps 5, 6, and 7.
5. Backup your customFiles, procs, and userPrefs directory in your case:

   e.g. "cd /data/awips/1998Apr08"
   "mv customFiles customFiles.orig"
   "mv userPrefs userPrefs.orig"

6. Make a customFiles symbolic link in your data case that points to the customFiles directory in WEScustomization; make a userPrefs symbolic link in your data case that points to the userPrefs directory in WEScustomization:

   eg. "ln -s /awips/fxa/WEScustomization/customFiles
   /data/awips/1998Apr08/customFiles"
   "ln -s /awips/fxa/WEScustomization/userPrefs /data/awips/1998Apr08/userPrefs"

7. Cd to the data case, and list out the contents of the links to ensure the links resolve the appropriate directories and files in /awips/fxa/WEScustomization.

   e.g. "cd /data/awips/1998Apr08"
   "ls customFiles"
   "ls userPrefs"

8. Copy the XXX-* files (e.g. LOT-*) in your customFiles directory that do not contain local geographic infomation to the global-LLL-files directory:

   "cd /awips/fxa/WEScustomization/customFiles".
   eg. "cp LOT-wwaConfig.template /awips/fxa/WEScustomization/global-LLL-files"

***Note:** Do not copy files to this directory that have geographic information unique to your CWA like XXX-radarsInUse.txt, XXX-radarsOnMenu.txt, XXX-mainConfig.txt, XXXdialRadars.txt, and XXX-mosaicInfo.txt. Try doing a more command on each XXX-* file and watch for local radar information or local/surrounding CWA information to check for files not to copy. See Appendix A for an example of the file list in global-LLL-files.

***Note:** Any files in customFiles without the XXX- prefix will be utilized in the new localization directly from the customFiles directory.

9. Check the customFiles directory for files without an XXX- prefix that contain local geographic information unique to your CWA like radarsInUse.txt, radarsOnMenu.txt, mainConfig.txt, dialRadars.txt, and mosaicInfo.txt. If you find such files *in this directory*, then rename them to make sure they don't get seen in the localization. This can be done by naming the files with an XXX- prefix for your local CWA (e.g. mv dialRadars.txt LOT-dialRadars.txt if you are creating a BMX localization). See Appendix A for an example of the file list in customFiles.
10. **"cd /awips/fxa/WEScustomization/XXX"** where XXX is your localization ID (e.g. LOT).
11. Copy any XXX-* files and generic files (no XXX- prefix) that do not contain local geographic information to your /awips/fxa/WEScustomization/global-LLL-files directory.

eg. "cp LOT-wwaConfig.template /awips/fxa/WEScustomization/global-LLL-files"

***Note:** Do not copy files to this directory that have geographic information unique to your CWA like dialRadars.txt, XXX-dialRadars.txt, XXX-radarsInUse.txt, XXXradarsOnMenu.txt, XXX-mainConfig.txt, XXX-mosaicInfo.txt, etc. Try doing a "more" command on each XXX-* file and watch for local radar information or local/surrounding CWA information to check for files not to copy. See Appendix A for an example of the file list in global-LLL-files and in the /awips/fxa/WEScustomization/XXX directory.

12. Run **"/awips/fxa/WEScustomization/scripts/linkLLLfiles.csh"** to put symbolic links in every /awips/fxa/data/localization/LLL directory that point to each file in /awips/fxa/WEScustomizations/global-LLL-files.

***Note:** When you want to make changes to global-LLL-files, modify the files in the global-LLL-files directory, and run the unlinkLLLfiles.csh script followed by linkLLLfiles.csh.

13. If you have generic directives (e.g. @@@RADAR_Z 1000) in your XXX-mainConfig.txt file you will need to create a new file in step 15 that will be accessed for localizing other CWAs (this is not a bad thing).
14. Copy your XXX-mainConfig.txt file from /awips/fxa/WEScustomization/XXX to the file /awips/fxa/WEScustomization/mainConfig/genericmainConfig.txt.

e.g. "cp /awips/fxa/WEScustomization/LOT/LOT-mainConfig.txt /awips/fxa/WEScustomization/mainConfig/genericmainConfig.txt"

15. Remove any local geographic directives from the genericmainConfig.txt file, leaving only generic directives (e.g. leave only entries like "@@@RADAR_Z 1000" in the genericmainConfig.txt file). Do not add entries if they do not exist in your original files. See Appendix A for an example of the genericmainConfig.txt file.
16. Run **"/awips/fxa/WEScustomization/scripts/modifymainConfig.csh"** to create a new XXX-mainConfig.txt file in each pre-localization directory in /awips/fxa/data/localization.

***Note:** If in the future you want to return the XXX-mainConfig.txt files to the original in each of the pre-localization directories, run the unmodifymainConfig.csh program in the same directory.

17. The next section (Section 8) will cover how to make the customizations in Section 7 take effect.

8. Create a New Localization For a Non-local Case

1. A new AWIPS localization usually needs to be created for every major AWIPS build, or when you create a case from scratch. If you have not customized your WES (Section 5 and Section 7), the localization you create will contain all the AWIPS default settings for color tables, templates, etc.

***Note:** If you try to use an old localization on a newer version of AWIPS associated with a new WES install, D2D might hang on startup and some products might not be displayable

2. Before running mainScript.csh, back up the localization if it exists:

   e.g. "cd /data/awips/1998Apr08/localizationDataSets"
   "mv BMX BMX.ob5.0"

3. **"cd /awips/fxa/data/localization/scripts"** and run mainScript.csh on the new localization you are about to create.

   e.g. "mainScript.csh BMX BMX"

***Note:** You will be prompted to enter your case name and verify it is correct.

4. If you are customizing your WES from your AWIPS, then backup the customColorMaps.nc file in your case, and copy the customColorMaps.nc file from the storagefiles directory into the workFiles directory in your case. If you are not customizing your WES from your AWIPS, then skip steps 4-6.

   e.g. "cd /data/awips/1998Apr08/workFiles"
   e.g. "mv customColorMaps.nc customColorMaps.nc.orig"
   e.g. "cp /awips/fxa/WEScustomization/storagefiles/customColorMaps.nc ."

5. After mainScript is done, **"cd /awips/fxa/WEScustomization/storagefiles"**.
6. Copy any colorMaps.nc and *.bcx files from the /awips/fxa/WEScustomization/storagefiles directory to your new localization in /data/awips/{$case_name}/localizationDataSets/XXX, where {$case_name} is the new case (e.g. 1998Apr08) and XXX is the new localization (e.g. BMX).
7. Start D2D with the new localization to verify your localization works and any customizations were successfully applied. If your localization was successful then try running a simulation to test creating a warning with WarnGen.

8. Once you have verified all your customizations took effect, you can easily create a new localization for any CWA in this case (e.g. FFC) by running mainScript.csh (step 3 with FFC for example) and following steps 5 and 6 (using FFC for example).

   e.g. "mainScript.csh FFC FFC"

9. To create a new localization *with no customization changes (ie. you skipped Sections 5 and 7)* on any new case (e.g. /data/awips/1998May31 Albany, NY event at ALY), all you need to do is back up the old localization (step 2 using ALY) and run mainScript.csh (step 3 using ALY).
10. To create a new localization *with customization changes (ie. you completed Sections 5 and 7)* on another case outside your CWA (e.g. /data/awips/1998May31 Albany, NY event at ALY), now all you need to do is back up the customization directories in the case (step 5 in Section 7 using /data/awips/1998May31), make symbolic links in the data case that point to the appropriate directories in WEScustomization (step 6 in Section 7 using /data/awips/1998May31), verify the links (step 7 in Section 7 using /data/awips/1998May31), back up the old localization (step 2 in Section 8 using ALY), run mainScript.csh (step 3 in Section 8 using ALY), and copy files into the new localization (steps 4, 5, and 6 in Section 8).

9. Archiving and Setting up a New Case

1. **Background:** WES uses archived AWIPS datasets for case playback and simulation. In AWIPS, cron jobs are setup on the AWIPS archive machine, AX, that copy AWIPS data from /data/fxa on DX1 to the AX. Each day is typically stored as a separate directory containing all the AWIPS data for that day (for the last seven days). There are a number of programs used to archive data from the seven day archive. One of the more common data archive programs that is available from the AWIPS Local Applications Development (LAD) is the HNX_Archive.tcl application. Another useful program for archiving text data is the Product Archiver, which is also available from the AWIPS LAD. The archive applications typically compress the data to fit on storage media such as DVD.
   Once archived, the data must be copied and uncompressed onto a machine running WES. The data must be put into a case (e.g. 2004Jun09) on the WES data storage location, /data/awips. After the data is copied to a case, a few directories need to be created, and an AWIPS localization needs to be created or copied into the case. Any archived text data will need to be added to the Postgres database (see section 10), and FFMP data will need to be created if desired (see section 11). The case is then ready for static review of all archived data and text. To run a simulation, the user must convert the data to DRT format, and then enter the simulation start time.

2. Obtain archive data (e.g. from the 7 day rollover or from a DVD).
3. As user fxa, prepare the WES for the archived dataset by making the critical base directory tree. First cd to the WES case storage root:

   cd /data/awips

4. Make the case name, along with the userPrefs, localizationDataSets, workFiles, customFiles subdirectories:

   e.g. mkdir 2004Jun09
   cd 2004Jun09
   mkdir userPrefs localizationDataSets workFiles customFiles tstorm

   ***Note:** Watch out for typos.

5. Uncompress the data into the case. If you don't have a case install program from your archiver, the follow the instructions below. For example, a 2004Jun09 case stored on DVD with tar files containing case-relative paths such as 2004Jun09/radar/kddc:

   e.g. mount /media/cdrecorder
   cd /data/awips
   foreach fil (`ls /media/cdrecorder/*.gz`) (note the ` is usually located above the Tab key)
   tar xvfz $fil
   end

6. Create a localization for the case using mainScript.csh (see sections 5-8). If you already have created a localization with this version of AWIPS, you can copy or link the localization into the <your_case>/localizationDataSets directory. If you don't have a localization already built, you have essentially three options for creating a localization (see sections 5-8). You can create a localization with the AWIPS defaults (no customization). You can create a localization with your customizations for your local CWA. And you can create a localization for a non-local CWA.
7. Verify the data was loaded correctly and the localization was created correctly by checking all your data with enhanced_case_review. It is important to check the data before running a simulation to isolate any errors in setting up the case.
8. If you need to add text data to the case. Then see section 10.
9. If you are running SCAN or FFMP, then see sections 11 and 12.
10. If you would like to run a simulation, then you need to convert to DRT format before running a simulation.

10. Adding Archived Text Data to Postgres

WES6.0 now uses Postgres to handle some database components of AWIPS. This replaces the flat file approach used in previous WES versions. The primary function of Postgres in WES6.0 is to support WarnGen in creating warnings (more AWIPS database functionality is anticipated in future WES builds). Text data can also be copied into the Postgres database where it can be accessed for static review or for use in a simulation. The following instructions detail how to add archived text data into the Postgres database for use with WES.

Obtain Archived Text Files

1. The text files need to be the exact format as is stored in the Postgres text database on AWIPS (likely the standard product format). This archiving can be done in a variety of ways. A WFO can access all the text products issued from an office in a tar file located in /data/fxa/archive/OUP/archive on their baseline AWIPS. There is also a program on the AWIPS LAD that archives text data called "Archived_text AWIPS Build 6 version".

Copy the Text Files into the Case as User fxa

2. The WES convention for Postgres file manipulation is to store the files in the <your_case>/archived_text/$PILNAME directory with AWIPS timestamps as their name (e.g. YYYYMMDD_hhmmss).

   e.g. as user fxa:
   mkdir /data/awips/1997May01/archived_text
   mkdir /data/awips/1997May01/archived_text/OKCSAW1
   cp saw1-2345.txt
   /data/awips/1997May01/archived_text/OKCSAW1/19970501_234500

Write the Files to the Postgres Database in Your Case

3. Run the start_simulator application, and click the "Tools" button.
4. Click on "Restore Case to Original Format" if the case is in DRT format. Note the WES requires that any new data be added to a case while the case is in original format.
5. Click on the "Write Archived Text to Database" button.
6. Select your case and localization ID, and click OK.

   Desciption of what happens: The WES will untar an empty database into a /data/awips/<your_case>/pgdata directory as user postgres if it does not already exist. If you have a pgdata in your case that is not owned by user postgres, then the WES will move that to <your_case>/badpgdata/pgdata.$date. If you someday accidentally change the ownership of the pgdata directory, say from copying a case as user fxa, you can manually change the ownership to user postgres and move the pgdata back to continue to use the database. The WES6.0 installation modified the /etc/sudoers file to allow the fxa account to untar a blank database and start/stop the postmaster as user postgres.

Once the database is in place, the WES will start the postmaster as user postgres, and it will start the TextDB_Server Read and Write processes as user fxa. Each file in the archived_text/$PILNAME directory will be written to the database using the "textdb –w" command. The time stamp of each file in the database is initially given the current time, so after each file is written, the time of the product in the database is corrected using the time of the filename. This will allow correct database access and purging.
After completion of writing all files to the database, the postmaster is stopped, and the TextDB_Servers are killed. Now a full copy of the database is available for static review.

Verify the Files Were Written Correctly

7. After the "Write to postgres database complete" displays in start_simulator, exit out of the start_simulator application.
8. Start "enhanced_case_review", and select your case, localization ID, and check the "Start AWIPS Text Workstation Control" checkbox to be able to access the database. The enhanced_case_review has been modified to also start the postmaster as user postgres, and start the TextDB_Server Read and Write processes to allow accessing the Postgres database.
9. Bring up a text window (e.g. Text1 in the Text Workstation Control window), and enter a product PIL in the "AFOS Cmd:" entry box (e.g. OKCSAW1 if you copied in this product), and hit return. The text products you copied in should be retrieved. Note that some text products display in D2D, so you can also use D2D to test the product availability (e.g. SPC Watches under the NCEP/Hydro menu for the SAW text product).
10. Check to make sure all versions are available. If you only see two versions available and the <your_case>/archived_text/$your_PILname directory has more than two valid files in it, then your database probably doesn't have the PIL defined. For a list of defined PILs see /awips/fxa/postgres/versionsTable.txt.

    If your PIL isn't covered by the wildcards in /awips/fxa/postgres/versionsTable.txt, then you will need to manually adjust the database. To do this:

    -Start enhanced_case_review
    -In a shell window type **"psql fxatext"**
    -"SELECT * FROM textProductInfo;"
    -Find your PIL with the versionstokeep set at the incorrect value (**e.g.** SEA | WRK | W3 | 2 | 2)
    -Delete the PIL using the appropriate id value (**e.g. "DELETE FROM textProductInfo WHERE cccid = 'SEA'; "**). Note that the ' is the mark next to the Enter key on the keyboard.
    -Verify the delete using **"SELECT * FROM textProductInfo;"**
    -Add the PIL wildcard to the versionsTable (**e.g. "INSERT INTO versionsTable VALUES ('CCCWRKXXX, '999' "**). Note that the ' is the mark next to the Enter key on the keyboard.
    -Verify the change exists by using **"SELECT * FROM versionsTable; "**
    -Type in **"\q"** and return to exit postgres (very important)
    -If this doesn't work, then email the soo_wes@comet.ucar.edu list.

Running a Simulation with Text Data

1. Once 1) the data has been copied to the archived_text directory, 2) the data has been written to the database, and 3) the files have been verified to exist, then the text data is ready to be used in a simulation.
2. Convert the case to DRT format using the "Tools" button in start_simulator. Since the text data has been added to the case before the conversion to DRT format, the WES will index the files in the archived_text directory along with the other data files.
3. Run a simulation.

   Desciption of what happens: In the first part of the simulation preparation, WES will start some of the AWIPS decoders, including the postmaster (as user postgres) and the TextDB_Server Read and Write processes. Then the AWIPS data links are created and deleted to set the start time. Every time a link is made for the achived_text file, the file is written to the database using "textdb -w", and the write time is modified based on the filename. After the links have been modified, the Postgres database is purged of future products using the simulation start time. Each time a text file is processed in a simulation, the file gets written to the database. When the simulation is over, the decoders are killed.

11. Preparing Cases for FFMP and Creating FFMP Data

11.1 Preparing a Case for FFMP

1. Because FFMP data are stored differently than most AWIPS data (i.e. latest 6 hour accumulations in files with no time in the filenames), archived FFMP data won't work directly with WES. Instead, a tool exists within WES to create FFMP data from archived datasets. Before WES can be used to create FFMP data, the case needs to be prepared for FFMP. These instructions will work for local cases or cases from other CWAs.
2. To create FFMP data from an archived case requires the following:

   a. basin files for each radar running FFMP (stored in /awips/fxa/data/localization/nationalData)

   b. HRAP grid digital RFC flash flood guidance (stored in <your_case>/img/SBN/netCDF/HRAP/FFG/XXRFC/Yhr where XXRFC is the RFC for your area and Yhr is 1hr, 3hr, and 6hr)

   c. DHR files for each radar running FFMP stored in <your_case>/radar/xxxx/DHR/layer0/res1/level256 (where xxxx is the radar name)

   d. Directories: <your_case>/tstorm, <your_case>/radar/xxxx/tstorm, <your_case/radar/xxxx/ffmp (where xxxx is the radar name), and <your_case/radar/xxxx/ffmp/lookupFiles

   e. A localization run with the "-scan" switch

   ***Note:** Failure to include all of the above elements will result in incomplete or bad FFMP data.

3. The first step in preparing your case for FFMP is to copy the basin files for each radar onto your WES. For your local cases, you should already have basin files on your AWIPS. Basin files from other radars will have to be retrieved from other NWS offices or the AWIPS NOAA1 server.
4. On your LX workstation copy the basin files to the WES (e.g. copy files to a tmp directory and burn a cd):

   e.g. "cd /awips/fxa/data/localization/nationalData"

   e.g. "cp ktlx_* /data/fxalocal/tmp" and burn a cd

5. As outlined in Section 5, copy these files to the /awips/fxa/WEScustomization/storagefiles directory to preserve the files on the machine in the WES upgrades

   e.g. "cp /media/cdrecorder/ktlx_* /awips/fxa/WEScustomization/storagefiles"

6. Copy the basin files to the /awips/fxa/data/localization/nationalData directory

   e.g. "cp /awips/fxa/WEScustomization/storagefiles/ktlx_* /awips/fxa/data/localization/nationalData"

7. After copying the basin files to the WES machine, you need to ensure the FFG data exists in the case.

   e.g. "ls <your_case>/img/SBN/netCDF/HRAP/FFG/XXRFC/Yhr where XXRFC is the RFC for your area and Yhr is 1hr, 3hr, and 6hr)

8. Ideally you will want to always include FFG data in your regular local archive, since there is no easy-to-access archive source for the digital FFG data. If you are trying to recreate old FFG files, you can check with the COMET case study group to see if they have access to the data (note that digital FFG data in general is not available prior to 1999 because that is when it was distributed via the SBN). If you can access some digital FFG data that is somewhat representative for your case there is a way to configure that to work with FFMP (see section 11.3), though not having the exact FFG data for that case can significantly change the way FFMP characterizes events.
9. After ensuring FFG data exists in your case, ensure DHR data exists for each radar to run FFMP.

   e.g. "ls <your_case>/radar/xxxx/DHR/layer0/res1/level256" (where xxxx is the radar name)

10. Ideally you will want to always include the DHR product on your RPS list and in your local archive. If you wish to create DHR data from archived level II data, you can try using Paul Jendrowski's programs available from the SOO/STRC website.
11. After ensuring DHR files exist in the case, ensure the required directories exist.

    e.g. "ls <your_case>/tstorm"

    "ls <your_case>/radar/xxxx/tstorm" (where xxxx is the radar name)
    "ls <your_case/radar/xxxx/ffmp" (where xxxx is the radar name)
    "ls <your_case/radar/xxxx/ffmp/lookupFiles" (where xxxx is the radar name)

12. If the directories do not exist in your case, copy a version of these directories over from a case that has them, or your local AWIPS (or create them manually as a last resort).

Recreating a localization (steps 13 and 14) should update all the files needed for the particular case.

13. After ensuring the case structure is ready for FFMP, create a new localization for your case running mainScript.csh.

    e.g. mainScript.csh OUN OUN

14. Once the localization is done, relocalize with the scan switch to create all the needed FFMP configuration files.

    e.g. mainScript.csh –scan OUN OUN

15. Start up D2D and check the SCAN menu to verify the FFMP menus exist for the radars you have configured FFMP to run. If the radar isn't listed, you will need to include the desired radar in XXX-radarsInUse.txt and XXX-radarsOnMenu.txt files in your customFiles directory in the case (where XXX is your localization id for the case).

    *__Note__: These steps are for evaluating the setup, and not for testing data. You will need to create new FFMP data in section 11.2 to be ready to look at data.

16. While in D2D, select the "FF" button on the upper right, and ensure a reasonable "FFG Expiration Time" exists (e.g. 96 hours), and click "Save". If the "FFG Expiration Time" is blank, FFMP will not be able to access the FFG data needed to create FFMP data.
17. Under the "Maps" and "FFMP Basins" submenu on the D2D, select the "kxxx Small Stream Basins" map, where kxxx is the radar name. Note you must be in State or Local scale to display this map. If all the needed basin files were included in nationalData, and the localization was rerun, the high resolution basin maps should display.
18. Now the case should be ready to create FFMP data.

11.2 Creating an FFMP Tar File for WES

The FFMP data format changed in OB5, therefore all FFMP data created in WES 4.0 or earlier versions will need to be recreated. FFMP data that worked with OB5.0 should continue to work with no further modification.

1. Once the case is prepared for FFMP creation (Section 11.1), the WES can be used to create FFMP data. The case can be in original format or DRT format when creating the data. The FFMP data is stored as tar files that are subsequently selected in the simulation entry window (e.g. 19970507_2346.tar.gz).
2. The time of the ffmp tar file represents *the end* of the ffmp accumulations. For example, a 19970507_2346.tar.gz file contains data up to 2346Z. During a simulation the FFMPprocessor will create new data each volume scan to add to the existing accumulations.

***Note**: To browse FFMP data in a static mode, you can create an ffmp tar file for the end of the time period of interest and review the last 32 frames of data. The D2D "Freeze time at this position" tool (selected after double clicking the clock on the bottom right of the D2D) will not work with FFMP data.

***Note**: If you are running FFMP data in a simulation you will want to create data up to *the start time of the simulation*. The FFMPprocessor will add to the accumulations each volume scan during the simulation.

3. Start up WES6.0 using "/awips/fxa/DRT/start_simulator", and click on the "Tools" button, followed by the "Create FFMP Dataset" button.
4. Select the case (FXA_DATA), localization (FXA_LOCAL_SITE), and start time of your planned simulation (FFMP start time), and click the "OK" button. While you are waiting for FFMP data to be created, you may watch the progress of the FFMP processor in the shell window used to launch the simulator.
5. FFMP data will be created for the 96 DHR files leading up to the start of the simulation (size of the FFMP storage). It does this by feeding a subset of the DHR files to the FFMPprocessor and other decoders started during the data generation. If you have multiple radars and many DHR files, the process can take 5-10 minutes. The WES has been programmed to warn the user if some of the requirements in Section 11 are not met.

   ***Note:** It is very important not to kill the simulator while it is creating FFMP data. If you kill the simulator while the FFMP data is being created, the …DHR/layer0/res1/level256.saved directory will need to be renamed to "level256" after removing "level256" and "level256ffmp". Be careful not to delete your original data directory.

6. Following a successful FFMP data creation, a tar file is created for each radars ffmp directory with the time stamp entered in the FFMP start time. The tar files are subsequently selected from the WES main simulation entry window, and they reside in <your_case>/radar/xxxx/ffmptars (where xxxx is the radar).
7. Verify the FFMP data was created correctly by starting up D2D with enhanced_case_review and loading the FFMP table for one of the valid radars. If there is no FFMP data in your case, then review any error messages and contact WES support.
8. After the data have been verified to exist, the FFMP tar file needs to be selected in the main simulation entry window.
9. In the main "Run Simulation" entry window next to "FFMP File and Radars", click on the "Select" button, and select a radar to be used.
10. A list of tar files should pop up. Select the desired tar file time, and click "OK".
11. The tar file selected should appear in the main simulation entry window along with a list of radars that have tar files at that time. Selecting one tar file from one radar will grab all the available tar files from other radars. Click "OK" to proceed with the simulation startup.

12. After the links are created for the simulation start time, each radar's ffmp directory is deleted, and a new directory is untarred into its place with the data valid up to the start time.
13. Note that most of the AWIPS decoders are also started in this step.
14. Before clicking on "Run Simulation" in the Verification Entry window, you may start D2D and view the new FFMP datasets with full FFMP table functionality.
15. If you wish to run a simulation, you may click "Run Simulation", and you will need to restart D2D. The FFMPprocessor is then started for simulation use, and each time the DHR files are processed by WES, a notification is sent to the FFMPprocessor and other AWIPS processes to create new FFMP data and update the table as in real time.

11.3 Creating FFG Data for an Old Case From Recent FFG Data

1. **Background**: Some of your old archived data sets may not have netCDF flash flood guidance needed for use with FFMP. If you have some digital FFG data from another event that is reasonably close to the FFG for the case, you may modify the files to work with the old case.
2. Copy the FFG files into your case as outlined in section 11.1.
3. For each file you will need to create a new FFG netCDF file with the modified time.
4. Use "ncdump" to create a text version of the file to modify. The following examples will illustrate creating a 19910426_1200.multi file from a 19970501_1200.multi file.

   e.g. "ncdump 19970501_1200.multi > tmp.txt"

5. Determine the time of the new FFG data you wish to create (e.g. 19910426_1200).
6. Create a file, newtime.txt, with the time entered in the following format: ss mm hh dd MM YYYY where ss is the seconds, mm is minutes, hh is hour, dd is day, MM is month, and YYYY is year (e.g. 00 00 12 26 04 1991).
7. Obtain the julian seconds from 1970 for this time by running

   "**/awips/fxa/DRT/calJulSecFrom1970.linux < newtime.txt**"

8. Edit the text version of the FFG data (**e.g. "vi tmp.txt"**) and replace the integer following "validTime =" with the new julian seconds from 1970 time calculated in step 7, and save the file.
9. Create a new netCDF file from your modified text file using ncgen.

   e.g. "ncgen –o 19910426_1200.multi tmp.txt"

10. Remove all the old files just leaving the updated FFG file.

11. Start D2D, and verify the FFG data is visible, and that it loads the appropriate time.
12. Repeat the process for each FFG file in the 1hr, 3hr, and 6hr directories.
13. If the data are displaying correctly, try creating new FFMP data with Section 11.1.

***Note:** If the integer seconds time is entered incorrectly inside the file, the data will still display correctly, but the FFMPprocessor will fail to time match the FFG data when new data is created with WES.

12. Preparing Cases for SCAN and Fixing Pre-OB5 SCAN Data

Background: Section 12.1 contains information on how to set up a case to work with SCAN in OB6.0/WES6.0. Section 12.2 contains information on fixing a pre-OB5 SCAN dataset.

***Note:** OB5 SCAN data will continue to work in OB6.0/WES6.0 with no modifications necessary. If you have OB4 SCAN data or earlier you will need to fix the data by following Section 12.2.

12.1 Preparing Cases for SCAN

1. The /data/awips/<your_casename>/tstorm directory must be copied from /data/fxa/tstorm on your real-time AWIPS or from another case from the same AWIPS build in the WES. This tstorm directory contains general information for both SCAN and FFMP. Note the data contained in this tstorm directory is much different than that in the tstorm subdirectory under each individual radar directory.

2. The SCAN SCIT data and the VIL density products are archived in numerous subdirectories under each radar's tstorm directory (e.g. /data/fxa/radar/ktlx/tstorm). This data can be archived from a real-time AWIPS and played back in WES.

3. The data used in the SCAN DMD display is archived from each radar's DMD directory (e.g. /data/fxa/radar/DMD...including both the elev* and netcdf subdirectories). The files under elev* are the raw files, which are used in a simulation, and the netcdf files are the files used for display in D2D and SCAN.

4. After the tstorm directories and data are copied over, the localization needs to be rerun using the "-scan" switch (e.g. mainScript.csh -scan OUN OUN). Now you can view SCAN data for case review and simulations.

5. If you do not have SCAN SCIT data archived from an event, but you do have you have all the SCAN SCIT inputs (1km CZ, 1km 0.5 degree Z, STI, VIL, TVS, and M), then you can create SCAN SCIT data by running a regular WES simulation.

   ***Note:** During a simulation, SCAN SCIT files, DMD data and FFMP data are created from the raw input files for each volume scan.

6. If you do not have the raw DMD files (/data/awips/1997May01/radar/ktlx/DMD/elev* directories), then DMD will not work in simulation mode. The DMD netcdf files are created from the raw files during a simulation.

7. If you do not have SCAN VIL density data archived from an event, but you do have the inputs (VIL, DVIL, ET, EET), then you can create the products by running a regular WES simulation.

***Note**: The SCAN display filters do not work when using the D2D “Freeze time at this position” tool (selected after double clicking the clock on the bottom right of the D2D).

12.2 Fixing pre-OB5 SCAN and DMD Data Sets for Use with OB6.0

In OB5.0, SCAN data and DMD data both changed format. If you have a pre-OB5 SCAN or DMD data set, the SCAN storm cells table will no longer load, and the DMD data will not be displayable under the radar Graphics submenu (outside of SCAN).

***NOTE: OB5 data will work in OB6 without any modification**

The following steps detail how to make pre-OB5.0 SCAN and DMD data visible in OB6.0:

1. Convert the case containing the SCAN and/or DMD data to DRT format if it is not already in DRT format.

2. Make sure you have "<your_case>/tstorm", and "<your_case>/radar/kxxx/tstorm", where kxxx is your radar

   ***Note**: These tstorm directories have much different contents. If you don't have these, then copy both of them from your real-time AWIPS.

3. Create an OB6.0 localization using mainScript.csh with WES6.0

4. Run mainScript.csh with the "-scan" switch (e.g. mainScript.csh -scan OUN OUN)

5. Run a simulation for the time period of interest using WES6.0

6. Verify the new data is being created during the simulation

7. After the simulation is over, verify the new data is visible

8. Run “cpscandmd2a.csh /data/awips/<your_casename>” to permanently copy the data into the DRT format "a" files

9. Now your case contains OB6 SCAN and DMD data, and you do not need to do these steps again unless you want a different time period

13. WESSL Tutorial

1. **Background**: WES Scripting Language (WESSL) provides the ability to release non-awips data within a simulation using a scripting language. The simulation developer can create a new script either from scratch or by modifying an existing wessl file. WESSL 6.0 was installed in /awips/fxa/DRT/wessl, and instructions/reference materials can be found through browsing the /awips/fxa/DRT/wessl/docs/index.htm file or online at http://wdtb.noaa.gov/tools/wes/wessl.htm

   Improvements in WESSL 6.0 include: 1) window popups no longer steal focus from D2D, 2) video and articulate presentations are now supported, 3) the TOP LSR importer now is included which will make WESSL text and maps pop-ups directly from SPC LSR logs, and 4) a pause function is now available which will allow a simulation to automatically be paused at a fixed time. For examples of how to run all the new WESSL6.0 functions, see the what's new section of the wessl documentation.

   There are two parts of this tutorial. Section 13.1 illustrates some of the functionality of WESSL, including the new functionality in WES6.0, through using the 1997May01 test case. Section 13.2 illustrates how to create a WESSL file for a new case from an existing wessl file.

13.1 Create a New WESSL Script for the 1997 May01 Test Case

2. Run /awips/fxa/DRT/wessl/wessl/builder.tcl .
3. Under the "File" menu select "Open".
4. Use the directory navigator to navigate to the /data/awips/1997May01/wessl directory, and click on "oun_5-1-97.wessl". Then click the "Open" button.
5. Under the "File" menu select "Save As". Then type in a new filename for the new WESSL script (e.g. newtest.wessl), and click on "Save".

   ***Note:** Files must be saved with the .wessl extension for them to be used in WES.

6. In the new WESSL script try modifying the 23:46 line "Simulation Has Started" text. With the blinking cursor on the modified line, click on the "Run" button in the upper right part of the interface to preview the command.
7. In the 23:46 line change the video file from the wessl_intro.AVI to jar_vel.avi (with the same full path), and click on the "Run" button. A movie loop should appear of kgrk velocity data with weak echo region contours for the Jarrell, TX tornadic storm.
8. Now try modifying the "23:47" line by changing the map latitude from "34.91" to "44.91", and delete "OUN". With the blinking cursor on the modified line, click on the "Run" button in the upper right part of the builder to preview the command. If you made both modifications, a new map will appear over the ABR CWA.

9. Now try modifying the “23:51” line to change the articulate file to read:

   “-command “mozilla file:///awips/fxa/DRT/wessl/source/articulate/wes5.0/player.html”

   And then press “Run”. The WES5.0 from the previous release articulate should play.

10. Remove the two lines for the “23:48” entry (including line with –map line and the line with –sound). Put a new pause in the wessl file here by entering “23:48 –pause –text {simulation paused.}”. Click “Run”, and the text should popup (have to be in a simulation to experience the pause).
11. In builder.tcl move the blinking cursor over the command line containing “23:46”. Click on the "Run" button in the upper right to step through each WESSL command until you reach the last command entry with the stop time of the simulation.
12. Once you have stepped through the wessl commands, select “Save” under the “File” menu and "Build" under the "File" menu.
13. When the builder is done building the script, list the new files created in your “wessl” directory (e.g. ls /data/awips/1997May01/wessl).
14. Start a simulation in WES using the 1997May01 test case, and select the new WESSL file to run (e.g. newtest.wessl) next to the "WESSL Script (Optional)" label in the entry box.

    ***Note:** You do not need to select any WESSL Case Flags in the WES GUI unless you want to run only parts of the WESSL script.

15. WESSL will launch the commands at the specified times during the simulation. The WESSL Station Log will allow the user to page through the WESSL pop ups. Building a new wessl script in a new case will be covered in the next section.

13.2 Create a New WESSL Script for A New Case

1. This section focuses on using the test case WESSL file as a template to build a new WESSL file for a new case. This section assumes a new localization has already been built in section 6 or section 8.
2. Make a “wessl” directory for your new WESSL source files in your data case if it doesn't exist (e.g. mkdir /data/awips/1998Apr08/wessl). The “wessl” directory must be all lowercase letters.
3. Run /awips/fxa/DRT/wessl/wessl/builder.tcl.
4. Under the "File" menu select "Open".
5. Use the directory navigator to navigate to the /data/awips/1997May01/wessl directory, and click on "oun_5-1-97.wessl". Then click the "Open" button.
6. Under the "File" menu select "Save As". Then navigate to the new “wessl” source file directory created in step 2 above (i.e. /data/awips/1998Apr08/wessl). Now type in a new filename for the new WESSL script (e.g. bmx_4-8-98.wessl), and click on "Save".

***Note:** Files must be saved with the .wessl extension for them to eventually be selected in WES.

7. In the new WESSL script try changing the time and date in the first line (23:46 05/01/97) to the start time and date of your case. Also modify the "Simulation Has Started" text. With the blinking cursor on the modified line, click on the "Run" button in the upper right part of the interface to preview the command.
8. Modify the time in the “23:47” line, delete OUN, and try using the Lat/Lon readout in D2D on your data case to put in appropriate values for your data case (to find lat-lon values right click on a map background in D2D to select “Lat/Lon Readout” and use the left mouse button to read out a lat-lon value on a map). With the blinking cursor on the modified line, click on the "Run" button in the upper right part of the interface to preview the command.
9. In builder.tcl move the blinking cursor over the command line containing the start time of your new simulation. Click on the "Run" button in the upper right to step through each WESSL command until you reach the last command entry with the stop time of the simulation.
10. Once you have stepped through the wessl commands, select “Save” under the “File” menu and "Build" under the "File" menu.
11. When the builder is done building the script, look at the new files created in your “wessl” directory (e.g. ls /data/awips/1998Apr08/wessl).
12. Start a simulation in WES, and select the new WESSL file to run (e.g. bmx_4-8-98.wessl) next to the "WESSL Script (Optional)" label in the entry box.

***Note**: that you do not need to select any WESSL Case Flags unless you want to run only parts of the WESSL script.

14. User Adaptable Grid Product Delay File (gridconfigfile)

A new file has been added to the /awips/fxa/DRT directory which allows the user to set a specific delay time that controls the visibility for each grid product (e.g. 0z NAM can be set to be visible at 0130z after setting the start time in DRT format). This file, called gridconfigfile, will allow the user to view grid products at the times they arrive in operations.

This file consists of the case-relative path of each grid product followed by a number. This number represents the time in minutes that you want the specific grid product to be delayed. To alter the delay time of a specific grid product, simply convert your case to original format, open gridconfigfile for editing, change the delay times and save. The default file for WES6.0 has a 20 minute delay for LAPS/MSAS and a 0 minute delay for all other grid products. Any product not listed in the file will receive a default delay of 0 minutes.
Once you convert to DRT format for any case, the gridconfigfile is copied into the <your_case>/drt directory, and the b-link inventories will be created with the new delay. A pop-up message will warn you if the master gridconfigfile in the /awips/fxa/DRT directory is different from the version you specified in a case.

> ***Note that changes to gridconfigfile MUST BE MADE while the case is in original format for the changes to take effect. If you make changes while in DRT format, you must then convert your case to original format and back to DRT for the changes to take place.**

To see the current delay times for a particular case, you can type "**more <your_case>/drt/gridconfigfile "**

Example of Changing Grid Delay Time Using gridconfigfile

Below is an example in which we change the delay time of LAPS and MSAS grid products to a delay time of 30 minutes from the current delay time of 20.

1. Convert your case to original format

2. Go to the DRT directory and open gridconfigfile for editing.

   cd /awips/fxa/DRT
   vi gridconfigfile

3. Change the delay times for the first two lines from 20's to 30's. Once completed, the first two lines should read as follows:

   Grid/FSL/netCDF/LAPS_Grid/LAPS 30
   Grid/FSL/netCDF/MSAS 30

4. Save the changes and then convert your case back to DRT format. In a simulation of this case, your LAPS and MSAS products will now process 30 minutes after valid time.

15. WES Main Files: enhanced_case_review, start_simulator, and start_awips

Background: There are three main files used in running WES. The enhanced_case_review application was designed for static review of cases with D2D. The start_simulator application was designed to prepare cases and run simulations. The start_awips application was designed to start D2D in a simulation. If you are new to WES and want to gain more experience with these applications, we recommend reading the sections below and stepping through the 1997May01 WES test case installation verification (section 4).

15.1 enhanced_case_review

In WES6.0 the enhanced_case_review application was updated to support text database queries. The first version of the modified start_awips program called enhanced_case_review was released in the previous WES5.0. This allowed for full functionality in reviewing FFMP and SCAN data outside of a simulation (i.e. in case review). For example, if you change the FFMP table "Thresh Type" from "precip" to "ratio" and select "Refresh D2D", the D2D will now update. Previously you had to run a simulation for this functionality to work. The enhanced_case_review works on both original and DRT format data. This script now starts up the AWIPS CommsRouter, notificationServer, TextDB_Server Write and Read, and the Postgres postmaster, along with the D2D.

1. To launch enhanced_case_review, run /awips/fxa/DRT/enhanced_case_review, or type enhanced_case_review as user fxa (it is in the path).
2. Next, select the case from the listing of /data/awips, and select the localization (if only one localization exists, it will fill in the value automatically).
3. Click the **OK** button, the AWIPS D2D launcher will be started. If more than one localization exists in this case, a pull-down menu may appear with the localization.
4. Click the **Start** button to launch D2D.
5. The enhanced_case_review application cannot be run during a simulation because the AWIPS decoders will conflict. There are popup warning messages if you try to do this. Please use start_awips to launch a D2D during a simulation.
6. If you would like to launch more D2D sessions, you can run another enhanced_case_review after the first enhanced_case_review has started loading D2D. The subsequent enhanced_case_review will only start D2D without starting more AWIPS decoders. A warning popup message will occur if you try to launch two versions before one has started the AWIPS decoders (to prevent AWIPS decoder conflicts).
7. When enhanced_case_review is shut down, the decoders are killed, to prevent impacting subsequent D2D sessions or simulations. In the event that enhanced_case_review was shut down uncleanly and there are leftover processes, the enhanced_case_review and start_simulator programs will notify the user of this bad condition, and recommend the processes be killed.

15.2 start_simulator

1. The start_simulator application was designed to prepare cases for simulations and run simulations. To launch the simulation as user fxa, just type in "start_simulator" at a shell prompt and hit return. The main simulator interface contains these features:

   Log window: Processing information is provided in the center of the main window.

   Help menu: Pull-down menu with background on WES and simulation instructions.

   Exit button: Exits start_simulator.

   Run Simulation button: Select a case and run a simulation.

   - **Simulation Entry window**:
     - **FXA_DATA**: case inside /data/awips,
     - **FXA_INGEST_SITE**: localization id,
     - **Case Start Time:** simulation start time,
     - **Case End Time:** simulation end time,
     - **WESSL Script (optional):** wessl file inside <your_case>/wessl
     - **WESSL Case Flags (optional):** any desired wessl case flags
     - **FFMP File and Radars:** ffmp tar file created with WES
     - **Save Current Settings button**: saves the current Simulation Entry to a user specified filename
     - **Load Saved Settings button:** loads a saved Simulation Entry to allow easy starting of different simulations
     - **OK button:** Starts the AWIPS decoders, prepares data relative to the case start time. This can take a few minutes on a large case.
     - **Cancel button:** Cancels the Simulation Entry window
   - **Entry Verification and Simulation Control window**: Summarizes the simulation settings once it is done preparing the case.
     - **Run Simulation:** Sets the clock back, starts the remaining AWIPS decoders, starts the selected wessl file, and starts checking for data to process every 15 seconds. After the simulation is started the follow buttons are available:
       - **Pause Simulation button**: Pauses the simulation, temporarily kills the notificationServer, and colors a crimson border around D2D and the simulation control window.

         - Resume Simulation button: resets the clock based on the paused time, restarts the notificationServer, and restores the crimson color to gray. Note that when you resume a simulation, your D2D time will be waiting for the simulation time to catch up to the time the simulation was resumed. To reset this cosmetic issue, just double

click on the D2D clock on the lower-right part of D2D, and select "Use Current Real Time".

- **Stop Simulation button:** Stops the simulation, kills the AWIPS decoders, and saves the simulation's newly created text products in the <your_case>/saved_textWSwork directory.

- **Cancel button:** Cancels the Simulation Entry window.

Tools button: WES data manipulation functions.

- **Convert Case Data to DRT Format button**: Hides data through renaming files, and builds inventories for use in a simulation. This only needs to be done once before simulations can be run. This can take 30-60+ minutes to run depending on the machine and the case.

- **Restore Case Data to Original Format button**: Restores files to their original names, and removes inventories used in a simulation. This only needs to be done if you would like to add data to a simulation. This is relatively fast (a few minutes)

- **Create FFMP DataSet button**: Creates FFMP datasets that are tarred up and manipulated through the "Run Simulation" button (see section 10). In WES6.0 this now is much faster (a few minutes).

- **Write Archived Text to Database**: Writes archived text data into a Postgres database (see Section 11). This is fairly quick (less than a minute).

- **Cancel button**: Cancels the Tools window.

15.3 start_awips

1. The start_awips application was designed to start D2D after a simulation has been started.
2. To launch start_awips, run /awips/fxa/DRT/start_awips, or type start_awips as user fxa.
3. Next, select the case from the listing of /data/awips, and select the localization (if only one localization exists, it will fill in the value automatically).
4. Click the **OK** button, the AWIPS D2D launcher will be started. If more than one localization exists in this case, a pull-down menu may appear with the localization.
5. Click the **Start** button to launch D2D.

16. Using Multiple Machines with WES

These instructions describe a way to run a WES simulation on one machine and connect other machines as clients to the simulation. This can be useful for pairing up forecasters during simulation training. In this configuration, one machine runs the simulation (start_simulator and start_awips), and the clients just run D2D using start_awips. While the following "manual" instructions work, they are intended for users that are relatively comfortable with understanding WES basics and running simulations. Future versions of WES will have improved plug and play type support for running simulations multiple machines and synchronizing clocks, etc. If you are interested in running a classroom full of machines with WES, we recommend contacting soo_wes@comet.ucar.edu for more information.

In configuring multiple machines to work during a simulation, one machine needs to be set up as a server to run the simulation and AWIPS decoders. All machines will have D2D clients that look to that server. Every machine must have the same WES version installed from the WES install CD (e.g. WES6.0).

Setup

1. Choose a machine to be a *server* machine, and install WES6.0 if it isn't already installed.

   e.g. bobcat will be the *server* (your *server* name will likely be different)
   "install-wes6.0.sh /usr1" on bobcat if it isn't already installed

   If you installed WES in the /usr1 directory, and you do not have /data as a directory, then the client data case would be stored in /usr1/data/awips.

2. Determine the location of the case you are going to mount from the server. You might want to start with the WES test case to make sure everything is set up correctly.

   e.g. "**cd /data/awips"** on bobcat
   "pwd"

   In this example the pwd yields /usr1/data/awips.

3. Choose other machines to be *client* machines, and install WES6.0 on them from the release CD (do not copy from the server machine). These machines must have different names.

   e.g. wolf will be a *client* machine
   "install-wes6.0.sh /usr1/client" on wolf

   If you installed WES in the /usr1/client directory, and you do not have /data as a directory, then /data will be a link that points to /usr1/client/data. This will mean your client data cases would be stored in /usr1/client/data/awips.

4. After installing WES6.0 on the client machine, change the FXA_WARNGEN_PRODUCT_ID variable on the client machine in /awips/fxa/.environs.$machinename to make it different from the server machine and any of the other client machines.

   e.g. on wolf change ${FXA_LOCAL_SITE}WRKW4 to ${FXA_LOCAL_SITE}WRKW5 in /awips/fxa/.environs.wolf

   ***Note:** If you do not have a /awips/fxa/.environs.$machinename file, then you can "cp /awips/fxa/.environs.localhost /awips/fxa/.environs.$machinename" where $machinename is the result of "hostname | cut –d . –f 1"

5. Create the server target directory from step 2 on the *client* machine in preparation for exporting the case storage directory from the server.

   e.g. "mkdir /usr1/data/awips" on wolf (from target in step 2)

   ***Note:** If this directory on the client machine already exists and has contents in it, you are going to need to move them out of the way (e.g. mv /usr1/data/awips /usr1/client/cases) before making the directory. If these contents are WES data cases and you want them visible on the client machine, then you can create links inside /data/awips that point to the new case locations (e.g. ln –s /usr1/client/cases/2002Feb10 /data/awips/2002Feb10).

   ***Note:** If /data *is a directory (not a link) on the server machine* you should consider creating a new and different directory in this step (e.g. mkdir /usr1/servermount) that you will use to mount the server's data case location to the client machine in the following steps.

6. The system administrator will need to export the data case storage directory on the server to all client machines. This should be auto-mounted on system start-up. In the following example /usr1/data/awips on the server, bobcat, will be exported to wolf. Mounting instructions are provided below based off of an example tested by Ken Cook at the ICT NWS Office (be careful…if you haven't done this before, please have your IT do this or you could seriously mess up your machine):

   <u>On the Server Machine</u>
   -From the **KDE Desktop Menu**, choose, **System Settings**, **Server Settings**, **Services**. Make sure the NFS box is checked.

   -**As root, edit /etc/exports** and add the following entry:
   `Your_export_dir  ip.address.of.client(rw,no_root_squash,no_all_squash)`

   e.g. /usr1/data/awips 129.15.59.61`(rw,no_root_squash,no_all_squash)`

   where 129.15.59.61 is the client's (e.g. wolf's) ip address.

   -As root edit /etc/hosts.allow and add the following entry:

ALL: ip.address.of.client

e.g. ALL: 129.15.59.61

where 129.15.59.61 is the client's (e.g. wolf's) ip address.

-**As root**, run **"exportfs –a**" to export the file system
-**As root**, run **"exportfs**" to check if the file system is listed (i.e. exported correctly)

-**As root**, stop and start the NFS server:
/etc/rc.d/init.d/nfs stop
/etc/rc.d/init.d/nfs start

On the Client Machine
-As root, edit /etc/fstab and add the following entry:

```
Server_name:Your_export_dir  client_dir  nfs  rw,auto,soft  0 0
e.g. bobcat:/usr1/data/awips  /usr1/data/awips  nfs  rw,auto,soft  0 0
```

where Your_export_dir is the same exported directory as in the "On the Server Machine" section above, and client_dir is the mounted directory on the client machine.

***Note:** If your /data *is a directory (not a link) on the server machine*, and you are exporting /data/awips to the client machine, then your Your_export_dir would be /data/awips and your client_dir would be something like /usr1/servermount (see step #5).

-As root, mount the server:
mount -a

7. Create a symbolic link for the case under /data/awips on all machines if it doesn't exist.

   e.g. "**ln –s /usr1/data/awips/1997May01 /data/awips/1997May01**" on wolf

   In this example the link already existed on bobcat so nothing was required on bobcat. If the link didn't exist on bobcat, the command would need to be run on bobcat, too.

   ***Note:** If you linked /data/awips to /usr1/servermount (Notes in #5 and 6), then you would link /usr1/servermount/1997May01 to /data/awips/1997May01 on wolf.

8. Copy an /awips/fxa/data/localization/nationalData/ipc.config file from the server machine into the localizationDataSets/XXX directory for the case.

   e.g. on bobcat "**cp /awips/fxa/data/localization/nationalData/ipc.config /data/awips/1997May01/localizationDataSets/OUN**"

   ***Note:** You need to use the nationalData version of the ipc.config file. There are multiple versions of these files in AWIPS, and they sometimes change from build to build. If this

file changes in future AWIPS builds you may need to update the ipc.config file when you create a new localization.

9. Edit the ipc.config in the case's localizationDataSets/XXX directory, and replace all "localhost" entries with the *server* name (or ip address). Then save the file.

   e.g. replace "localhost" with "bobcat" in /data/awips/1997May01/localizationDataSets/OUN/ipc.config file and save

   ***Note:** In vi this can be done using ":g/localhost/s/localhost/bobcat/" followed by ":wq!".

   ***Note:** Once the ipc.config file in the case has been hardwired for the server, the start_simulator or enhanced case_review applications will not work for this case when run on the client machine. If you delete this file in the localizationDataSets/XXX directory, the client will be able to run start_simulator or enhanced_case_review on the client machine as AWIPS will default to using the localhost version in the awips directories as it normally does.

   *Note: Always try to run your simulations on the machine physically containing the data, or the increased disk I/O across machines will significantly slow case preparation down.

Testing

10. Verify the data for the case is visible from all machines. Don't run start_simulator to run a simulation yet.

    e.g. "**start_awips**", select 1997May01, and view 0.5 Z/SRM8 radar product

11. Run a simulation on the server machine.

    e.g. "**start_simulator**" on bobcat

12. Verify that the simulation runs correctly on the server machine

    e.g. "**start_awips**" with the Text Workstation Control box checked on bobcat, verify all tilts updates, create a warning

13. After the server machine is working fine, then test to see if all tilts updates happen on the client machine. Do not try creating a warning on the client machine yet.

    e.g. "**start_awips**" on wolf, check all tilts updates

    ***Note:** At this time, the clock on the client machine isn't set back to the simulation, so your D2D clock will register the current date and time and not the simulation time. This will cause WarnGen on the client machine to create "future warnings" that will prevent

warnings from being generated correctly on the server machine. To prevent these problems, the clock will need to be manually reset on the client machine in the next steps.

14. Shut down D2D on the client machine.

    e.g. exit D2D on wolf

15. Determine the current time on the server machine.

    e.g. "**date –u**" on bobcat, this yields something like Thu May 01 23:46:14 UTC 1997, depending on when you run the command

16. Set the clock back on the client machine to be close to the server (the date format is MMDDHHmmYY).

    e.g. "/awips/fxa/DRT/bin/date –u 0501234697"

17. Start D2D on the client machine, and test to make sure data are updating and WarnGen works.

    e.g. "start_awips" with the Text Workstation Control box checked on wolf, verify all tilts, then create a warning in a separate pane.

18. When the simulation is over, manually set the clock back to current time on client machine

    e.g. "date –u" on bobcat, yields something like Thu Jan 05 15:32:47 UTC 2006

    e.g. "/awips/fxa/DRT/bin/date –u 0105153206" on wolf

    This case is now ready for running a simulation.

Starting a Simulation with D2D Clients on Multiple Machines

Running a simulation with multiple clients requires completing the "Setup" and "Testing" sections first (see above). This example will show you how to start and stop a simulation after successfully setting up the mount points.

In this example a simulation will be run on a machine named bobcat using the 1997May01 case that is located in /usr1/data/awips, which resides on bobcat. D2D will be running on the server machine, bobcat. D2D will also be running as a client on a machine called wolf.

1. Start up a simulation on the server machine.

   e.g. "start_simulator" on bobcat

2. After the simulation has been started on the server machine, manually set the clock back on the client machine to the time on the server machine.

   e.g. "date –u" on bobcat to find the current simulation time

   e.g. "/awips/fxa/DRT/bin/date –u 0501234697" to set the clock back on wolf

3. Start up D2D on the server machine.

   e.g. "start_awips" with the Text Workstation Control box checked on bobcat

4. Start up D2D on the client machine.

   e.g. "start_awips" with the Text Workstation Control box checked on wolf

5. If the simulation is paused and resumed on the server machine, the clock reset will not register on the client machine. The clock will need to be manually reset (see step 2) on the client machine after the simulation is resumed to get the times in sync again.

6. When the simulation is over, set the clock back to the current time on the client machine.

   e.g. "date –u" on bobcat to find the current time

   e.g. "/awips/fxa/DRT/bin/date –u 0105153206" on wolf to restore wolf to current time

17. Installing Flash Plug-In for Linux Supported Web Browsers

In order to view Articulate presentations or other Flash based products in Linux, it is necessary for your web browsers to have the required plug-ins. If you do not know if your browser has the appropriate plug-ins, please follow step 3 in the example at the bottom of this page. All the files necessary for Flash plug-in installation are located on the WES6.0 install CD (install_flash_player_7_linux.tar.gz. The Readme.txt document in this tar file also contains further documentation for the plugin installation.

The installation instructions will tell you to copy the necessary plug-in files into the plugins directory of your internet browser (i.e. **/usr/lib/mozilla-1.7.10/plugins**, **/usr/local/netscape/plugins**). The following is an example of the installation process for the Mozilla web browser:

Example of Flash Plug-in Installation for Mozilla Browser

1. Untar the plugins file from the WES6.0 install CD into /awips/fxa/install_flash_player_7_linx if you have not already done so in the WES6.0 installation Section 3.

   "cp /media/cdrecorder/install_flash_player_7_linux.tar.gz /awips/fxa"

   "tar xvfz /awips/fxa /install_flash_player_7_linux.tar.gz"

2. Navigate to the install_flash_player_7_linux directory

   cd /awips/fxa/install_flash_player_7_linux

3. Copy libflashplayer.so and flashplayer.xpt to the Mozilla plug-in folder (i.e /usr/local/mozilla/plugins or /usr/lib/mozilla-1.7.10/plugins).

   cp libflashplayer.so /usr/lib/mozilla-1.7.10/plugins
   cp flashplayer.xpt /usr/lib/mozilla-1.7.10/plugins

4. Once the installation is complete the plug-in will be installed in your browser. To verify, go to the browser, click help and then click "About Plug-ins". In the Shockwave Flash row, there should be a "Yes" under the Enabled column. You may also wish to try the WES test case to make sure the articulate loads (section 4).

5. If the installation fails, then review the /awips/fxa/install_flash_player_7_linux/Readme.txt documentation, and contact WES support for help (soo_wes@comet.ucar.edu).

18. Installing Xine Video Viewing Application

WES 6.0 includes all the files necessary for viewing AVI files with the Xine video viewing application for RHEL3 and RHEL4. Xine will be installed during WES 6.0 installation if you accept the request, however if you would like to manually install Xine, the following instructions will tell you how.

In order for Xine to work, several directories must be placed into the /usr/local directory. There are two ways to go about this. You can download a Xine tar ball and install instructions from your favorite website. The other option is to manually untar the Xine tar files located on the WES 6.0 Installation CD. Below you will find examples for both of these install methods.

Option 1: Manually untar the Xine files located on the WES 6.0 Install CD

1. Mount the WES 6.0 Install CD and copy the necessary files to /usr/local

   ***Note: There are different files for different versions of Red Hat Enterprise Linux. Be sure to follow the directions for your specific build.**
   RHEL4 = Red Hat Enterprise 4
   RHEL3 = Red Hat Enterprise 3

   mount /media/cdrecorder/ (RHEL4)
   cp /media/cdrecorder/xine4include.tar.gz /usr/local
   cp /media/cdrecorder/xine4lib.tar.gz /usr/local
   cp /media/cdrecorder/xine4man.tar.gz /usr/local
   cp /media/cdrecorder/xine4share.tar.gz /usr/local
   cp /media/cdrecorder/xine4bin.tar.gz /usr/local/bin

   mount /mnt/cdrom/ (RHEL3)
   cp /mnt/cdrom/xine3include.tar.gz /usr/local
   cp /mnt/cdrom/xine3lib.tar.gz /usr/local
   cp /mnt/cdrom/xine3man.tar.gz /usr/local
   cp /mnt/cdrom/xine3share.tar.gz /usr/local
   cp /mnt/cdrom/xine3bin.tar.gz /usr/local/bin

2. Untar each of these files

   (RHEL4)
   tar xvfz xine4bin.tar.gz
   tar xvfz xine4include.tar.gz
   tar xvfz xine4lib.tar.gz
   tar xvfz xine4man.tar.gz
   tar xvfz xine4share.tar.gz

   (RHEL3)
   tar xvfz xine3bin.tar.gz

tar xvfz xine3include.tar.gz
tar xvfz xine3lib.tar.gz
tar xvfz xine3man.tar.gz
tar xvfz xine3share.tar.gz

3. Create Links

   ln –s /usr/local/lib/libxine.so.1.13.0 /usr/local/lib/libxine.so
   ln –s /usr/local/lib/libxine.so.1.13.0 /usr/local/lib/libxine.so.1

4. Add line **/usr/local/lib** in the file **/etc/ld.so.conf**

5. Run ldconfig to complete install

   ldconfig

Option 2: Download from Website and Compile

1. Download and untar the Xine lib tar file from your favorite site. The official site is: http://xinehq.de/index.php/releases

   tar xvfz Xine-lib-1.1.0.tar.gz

2. Go to the new directory and run the compilation commands

   cd Xine-lib-1.1.0
   ./configure
   make
   make install
   make clean

3. Add line **/usr/local/lib** in the file **/etc/ld.so.conf**

4. Run ldconfig

   ldconfig

5. Download and untar the Xine ui tar file

   tar xvfz Xine-ui-0.99.4.tar.gz

6. Go to the new directory and run the compilation commands to complete install

   cd Xine-ui-0.99.4
   ./configure
   make

make install
make clean

Appendix A

Example of files in WEScustomization subdirectories for a localization with the id XXX are given below. Note that your file list will vary due to local differences in customization practices.

1./awips/fxa/WEScustomization/global-LLL-files

XXX-acqPatternAddOns.txt XXX-
backgroundMenus.txt XXX-
commonLdadMenus.txt XXX-
localDataKeys.txt XXX-
localDepictKeys.txt XXX-
localProductButtons.txt XXX-
radarDataMenus.template XXX-
sls_county_block.preTemplate XXX-
wwaConfig.template XXX-
wwaDefaults.txt XXX-
wwa_ffw.preWWA XXX-
wwa_flflood_sta.preWWA XXX-
wwa_svr2.preWWA XXX-
wwa_svr.preWWA XXX-
wwa_svrwx_sta.preWWA XXX-
wwa_tor.preWWA XXX-
wwa_wrksls.preWWA XXX-
wwa_wrksls.wwaProd

***Note:** You should not have files in this directory (with or without XXX- prefixes) that have local geographic information in them like XXX-radarsInUse.txt, radarsInUse.txt, XXXradarsOnMenu.txt, XXX-mainConfig.txt, XXX-dialRadars.txt, XXX-mosaicInfo.txt, etc.

2./awips/fxa/WEScustomization/XXX

dialRadars.txt
XXX-acqPatternAddOns.txt
XXX-commonLdadMenus.txt
XXX-commonLdadMenus.txt.bad
XXX-dialRadars.txt XXX-eta12.sup
XXX-hydroSiteConfig.txt
XXX-mainConfig.txt
XXX-portInfo.txt
XXX-pupId.txt
XXX-radarDataMenus.template
XXX-radarsInUse.txt
XXX-radarsOnMenu.txt
XXX-spotters.goodness XXX-
wwaConfig.template XXX-
wwaConfig.txt XXX-
wwa_counties.master XXX-

wwa_counties.patch XXX-
wwa_zones.master XXX-
wwa_zones.patch

***Note:** Because this directory is for your local CWA (XXX in this example), and it is not shared with other localizations, you may have files in this XXX directory that have local geographic information with or without the XXX- prefix like radarsInUse.txt, XXX-radarsInUse.txt, radarsOnMenu.txt, mainConfig.txt, dialRadars.txt, mosaicInfo.txt, etc.

3./awips/fxa/WEScustomization/customFiles

activeGridSources.txt
arrowStyle.rules
browserFieldMenu.txt
contourStyle.rules
eta12.cdl
eta12.sup
gridImageStyle.rules
gridPlaneTable.txt
iconStyle.rules
LocalCitiesInfo.txt
localGridSourceTable.txt
MTR.goodness MTR.primary
XXX-backgroundMenus.txt
XXX-dialRadars.txt
XXX-localDataKeys.txt
XXX-localDepictKeys.txt
XXX-localProductButtons.txt
XXX-mainConfig.txt
XXX-mosaicInfo.txt XXX-radarsInUse.txt
XXX-radarsOnMenu.txt
XXX-sls_county_block.preTemplate
XXX-wwa_cem.preWWA
XXX-wwa_dam_break.preWWA
XXX-wwaDefaults.txt
XXX-wwa_ffw.preWWA
XXX-wwa_flflood_sta.preWWA
XXX-wwa_svr2.preWWA
XXX-wwa_svr.preWWA
XXX-wwa_svrwx_sta.preWWA
XXX-wwa_tor.preWWA
XXX-wwa_wrksls.preWWA
XXX-wwa_wrksls.wwaProd
radarDataMenus.template
radarDepictKeys.template
radarProductButtonInfo.template
SiteChangesLog

virtualFieldTable.txt
WWA_aircraft.preWWA WWA_alert1.preWWA
WWA_alert2.preWWA
WWA_blizzard_wrn.preWWA
WWA_blodust_adv.preWWA
WWA_blodust_wrn.preWWA
WWA_blosnow_adv.preWWA
WWA_coast_fld_stmt.preWWA
WWA_coast_fld_wat.preWWA
WWA_coast_fld_wrn.preWWA
WWA_esf.preWWA
WWA_excheat_wrn.preWWA
WWA_extheat_wat.preWWA
WWA_extheat_wrn.preWWA
WWA_ffld_wat.preWWA
WWA_ffld_wrn.preWWA
WWA_ffs.preWWA
WWA_flood_wat.preWWA
WWA_flood_wrn.preWWA
WWA_fog_adv.preWWA
WWA_freeze_adv.preWWA
WWA_freeze_wrn.preWWA
WWA_frost_adv.preWWA
WWA_frost_wrn.preWWA
WWA_frzdrzl_adv.preWWA
WWA_frzrain_adv.preWWA
WWA_frzrain_wrn.preWWA
WWA_hazard_outlk.preWWA
WWA_heat_adv.preWWA
WWA_heat_outlook.preWWA
WWA_hiwind_wat.preWWA
WWA_hiwind_wrn.preWWA
WWA_hurricane_wat.preWWA
WWA_hurricane_wrn.preWWA WWA_hvysnow_wrn.preWWA
WWA_icestrm_adv.preWWA
WWA_icestrm_wrn.preWWA
WWA_mws.preWWA
WWA_now.preWWA
WWA_npw.preWWA
WWA_pns.preWWA
WWA_pub_info.preWWA
WWA_rec_evt.preWWA
WWA_redflag_wat.preWWA
WWA_redflag_wrn.preWWA
WWA_severe_outlook.preWWA
WWA_short.preWWA

WWA_slt_adv.preWWA
WWA_slt_wrn.preWWA
WWA_smoke_adv.preWWA
WWA_snow_adv.preWWA
WWA_specialstmt.preWWA
WWA_svrstmt.preWWA
WWA_svrt_wat_sls.preWWA
WWA_svrt_wat_wcn.preWWA
WWA_tor_wat_sls.preWWA
WWA_tor_wat_wcn.preWWA
WWA_tropstorm_wat.preWWA
WWA_tropstorm_wrn.preWWA
wwa_urbssflood_adv.preWWA
WWA_volash_adv.preWWA
WWA_volash_wrn.preWWA
WWA_wcn.preWWA
WWA_wind_adv.preWWA
WWA_wintstrm_wat.preWWA
WWA_wintstrm_wrn.preWWA
WWA_winwea_adv.preWWA
WWA_wndchil_adv.preWWA
WWA_wndchil_wrn.preWWA
WWA_wsr88d.preWWA
WWA_wsw.preWWA
WWA_ww_outlk.preWWA

***Note:** For files in the customFiles directory *without the XXX- prefix* you should not have files that contain local geographic information in them like radarsInUse.txt, radarsOnMenu.txt, mainConfig.txt, dialRadars.txt, mosaicInfo.txt, etc.

4. /awips/fxa/WEScustomization/mainConfig

genericmainConfig.txt (with the following entries inside the genericmainConfig.txt file):

@@@RADAR_Z 1000
@@@RADAR_V 1002
@@@RADAR_8 1018